



Air Quality Permitting Statement of Basis

August 30, 2005

Permit to Construct No. P-050018

**Seedbiotics
Caldwell, ID**

Facility ID No. 027-00088

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FINAL

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Acronyms, Units, and Chemical Nomenclatures

AAC	IDAPA 58.01.01.585 Acceptable Ambient Concentrations
AACC	IDAPA 58.01.01.586 Acceptable Ambient Concentrations for Carcinogens
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
ASTM	American Society for Testing and Materials
Btu	British thermal unit
CO	carbon monoxide
DEQ	Department of Environmental Quality
EPA	U.S. Environmental Protection Agency
HAPs	Hazardous Air Pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/hr	pound per hour
m	meter(s)
MACT	Maximum Achievable Control Technology
MMBtu	million British thermal units
NAAQS	National Ambient Air Quality Standards
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
PM	particulate matter
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
Rules	Rules for the Control of Air Pollution in Idaho
scf	standard cubic feet
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SM	Synthetic Minor
SO ₂	sulfur dioxide
T/yr	tons per year
µg/m ³	micrograms per cubic meter
UTM	Universal Transverse Mercator
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01.200, Rules for the Control of Air Pollution in Idaho, for issuing permits to construct.

2. FACILITY DESCRIPTION

Seedbiotics operates two process lines for the treatment of seeds. Raw seeds, a fungicide, adhesive polymers, water, dyes/colorants, peat inoculant, and limestone are combined in mix tanks to treat the seeds. Treated seeds are then transferred to the drying deck to remove moisture. Dried seeds are transferred to a cooling deck, and then bagged for storage or shipping.

3. FACILITY / AREA CLASSIFICATION

The facility is not a designated facility as defined in IDAPA 58.01.01.006.27. The facility is classified "B" because its potential to emit is below major source threshold levels. The SIC code defining the facility is 0723.

Seedbiotics is located in Caldwell, and within Canyon County. Canyon County is located within AQCR 64, which is classified as unclassifiable for all federal and state criteria air pollutants.

4. APPLICATION SCOPE

This permitting action is a revision to the existing permit which accomplishes the following:

- changes the limestone storage silos' pollution control devices
- increases the maximum allowable product throughput (production)
- increases the allowable hours of operation

This permit replaces PTC number P-020048, dated October 7, 2003, the terms and conditions of which no longer apply.

4.1 Application Chronology

12/6/04	Seedbiotics submits a permit revision application
3/9/05	Permit revision application is withdrawn
4/4/05	Permit revision application is resubmitted
5/4/05	Permit application is determined complete
7/13/05	Draft permit is released for facility review

5. PERMIT ANALYSIS

This section of the Statement of Basis describes the regulatory requirements for this PTC action:

5.1 Equipment Listing

Table 5.1 EQUIPMENT LISTING

Source Description		Emissions Controls
Line 1	<u>Limestone storage silo</u> 50 ton capacity	<u>Torit Division dust collector</u> Model TJ1080-155 Stack height = 20 feet; stack diameter = 16 inches 95% efficient for PM
	<u>Mixer</u> CentriCoater Model CC250 550 pound batch capacity	
	<u>Drying deck</u> Oliver Machine 5 MMBtu/hr natural gas heater ¹	<u>Baghouse 1-1</u> Cantech Enviro Systems, Inc. Model 195HP1415TRH Stack height = 30 feet; stack diameter = 29 inches 99.9% efficient for PM
	<u>Cooling deck</u> Oliver Machine	<u>Baghouse 1-2</u> Cantech Enviro Systems, Inc. Model 195HP1415TRH Stack height = 30 feet; stack diameter = 28 inches 99.9% efficient for PM
Line 2	Mixer	<u>Baghouse 2-1</u> Cantech Enviro Systems, Inc. Model 195HP1415TRH Stack height = 30 Rectangular stack = 25 inches x 23 inches 99.9% efficient for PM
	<u>Drying deck</u> Oliver Machine 5 MMBtu/hr natural gas heater ¹	
	<u>Cooling deck</u> Oliver Machine	<u>Baghouse 2-2</u> Cantech Enviro Systems, Inc. Model 195HP1415TRH Stack height = 30 feet Rectangular stack = 25 inches x 23 inches 99.9% efficient for PM
	<u>Limestone storage silo</u> 50 ton capacity	<u>Baghouse 2-2</u> Cantech Enviro Systems, Inc. Model 195HP1415TRH Stack height = 30 feet Rectangular stack = 25 inches x 23 inches 99.9% efficient for PM

¹ Exempt source per IDAPA 58.01.01.222.02.c

5.2 Emissions Inventory

Table 5.2 is an emissions summary of the Seedbiotics facility. A detailed emissions inventory is included as Appendix B.

Table 5.2 EMISSIONS SUMMARY

Process	PM Emissions		TAP	
	lb/hr	T/yr	lb/hr	T/yr
Line 1:	0.768	3.36	0.89	3.92
Line 2:	0.739	3.24	0.89	3.88
Line 1 silo	1.150	0.21	1.15	0.21
Line 2 silo	0.023	0.00	0.02	0.00
Facility total	2.68	6.81	2.95	8.01

5.3 Modeling

Table 5.3 is a summary of the modeling analysis and compliance with applicable NAAQS. A detailed modeling analysis is included as Appendix C.

Table I

Release Point	PM ₁₀ Maximum Modeled Concentration (µg/m ³)		TAP Maximum Modeled Concentration (µg/m ³)		
	24 Hour	Annual	Arsenic	Calcium Carbonate	Crystalline Silica
Facility Total	30.8	6.1	1.9E-04	0.035	0.00019
Background Concentration	81	27			
Total Impact (Facility + Background)	112	33			
NAAQS	150	50			
Concentrations below NAAQS?	Yes	Yes			
AAC or AACC			2.3E-04	0.5	0.005
Impacts below increment?			Yes	Yes	Yes

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this PTC.

IDAPA 58.01.01.201 Permit to Construct Required

The facility is required to obtain a Permit to Construct due to emission control reconfiguration as well as product throughput increases.

5.5 Permit Conditions Review

This section describes only those permit conditions that have been revised, modified or deleted as a result of this permit action. All other permit conditions remain unchanged.

Permit Section 2 Line 1 and Line 2 Limestone Storage Silos

Permit Condition 2.2 *Emissions Control Description* shows the reconfiguration of the emission controls for the limestone silos.

Permit Condition 2.3 *Emission Limits* was added to reflect the emission control device reconfiguration, and to defer to Permit Section 3 for emission limits.

Permit Condition 2.5 *Throughput Limits* was changed to reflect the requested increase in limestone throughput from 4,000 tons per year and 2,000 tons per year for Line 1 and Line 2, respectively, to 18,250 tons per year for each silo. The maximum hourly loading rate of 50 tons per hour was removed because 50 tons per hour is the equipment maximum capacity.

Permit Condition 2.6 *Baghouse Pressure Drop* was added to reflect the emission control device reconfiguration, and to defer to Permit Section 3 for pressure drop requirements.

Permit Section 2 Permit Conditions which were deleted with this PTC revision:

- Permit Condition *Bin Vent Filters* was removed to reflect silo emissions rerouting to the Torit dust collector (Line 1) and Baghouse 2-2
- Permit Condition *Line 1 and Line 2, Limestone Storage Silo Stack Extensions* was removed due to silo emission control rerouting
- Permit Condition *VE Monitoring* was removed because emission control VE monitoring is covered in Permit Section 3
- Permit Condition *Operations and Maintenance Manual Requirements* was removed because O&M manual requirements are covered in Permit Section 3

Permit Section 3 *Product Line 1 and Product Line 2*

Permit Section 3 was changed:

- to include both product lines
- to reflect the requested equivalent throughput/production of each line
- to incorporate the cooling decks and drying decks of each line because the throughput is equivalent for each emission unit in the line.

Permit Condition 3.2 *Emissions Control Description* was added to reflect the emission control devices reconfiguration. Table 3.2 was added to show the parallel arrangement of the baghouses on each line.

Permit Condition 3.3 *Emissions Limits* was added to reflect the emissions limits due to emission control devices reconfiguration as well as throughput increases.

Permit Condition 3.5 *Throughput Limits* was changed from the previous limits to the requested limits:

- Product Line 1 was changed from 4.8 tons per hour and 12,000 tons per year to six tons per hour and 52,560 tons per year throughput/production.
- Product Line 2 was changed from 4.8 tons per hour and 6,000 tons per year to six tons per hour and 52,560 tons per year throughput/production.

Permit Condition 3.6 *Pressure Drop Monitoring Devices* dropped the 60 day setup requirement for the devices, as they must already be installed as of this permit.

Permit Condition 3.7 *Pressure Drop* was changed to include all pollution control devices.

Permit Condition 3.8 *Baghouse 2-1 Stack Height* dropped the 60 day stack height extension requirement for the baghouse, as it must already be installed as of this permit.

Permit Condition 3.11 *Throughput Monitoring* was changed to reflect stated maximum hourly throughput/production of each line (six tons per hour each). The previous requirement of hourly records was changed to hourly records derived from monthly throughput divided by monthly hours of operation.

Permit Condition 3.13 *Operation and Maintenance Manual Requirements* removed the 60 day development requirement, as the O&M manual must already be developed as of this permit.

Previous Permit Section 4 Permit Conditions which were deleted with this PTC revision:

- Previous Permit Section 4 *Line 1 Drying and Cooling deck and the Line 2 Drying Deck and Cooling Deck* was incorporated to current Permit Section 3 *Product Line 1 and Product Line 2* because drying and cooling throughputs are identical to mixing throughputs; therefore, separate Permit Sections are not necessary.
- Permit Condition *Loading Rate Limits* was deleted, and is now incorporated in the current Permit Section 3
- Permit Condition *Hours of Operation Limits* was deleted because hours are no longer limited
- Permit Condition *Hours or Operation Monitoring* was deleted, and is now incorporated in the current Permit Section 3

6. PERMIT FEES

The \$1,000 application fee was received on November 22, 2004. The IDAPA 58.01.01.225 *PTC Processing Fee* of \$5,000 for emission increases of 10 to less than 100 tons per year was received on September 7, 2005.

Table 5.1 PTC PROCESSING FEE TABLE

Emissions Inventory			
Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.0	0	0.0
SO ₂	0.0	0	0.0
CO	0.0	0	0.0
PM ₁₀	5.7	0	5.7
VOC	0.0	0	0.0
TAPS/HAPS	6.6	0	6.6
Total:	12.3	0	12.3
Fee Due	\$ 5,000.00		

7. PERMIT REVIEW

7.1 Regional Review of Draft Permit

The DEQ Boise regional office was provided the draft permit for review and had no comment.

7.2 Facility Review of Draft Permit

The facility was provided the draft permit for review and requested only contact name changes for the permit.

7.3 Public Comment

An opportunity for public comment period on the PTC application was provided from May 24, 2005 to June 22, 2005 in accordance with IDAPA 58.01.01.209.01.c. During this time, there were no comments on the application and no requests for a public comment period on DEQ's proposed action.

8. RECOMMENDATION

Based on review of application materials, and all applicable state and federal rules and regulations, staff recommend that Seedbiotics be issued PTC No. P-050018 for the Caldwell facility. No public comment period is recommended, no entity has requested a comment period, and the project does not involve PSD requirements.

CM/sd Permit No. P-050018

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Appendix A

AIRS Information

P-050018

AIRS/AFS^a FACILITY-WIDE CLASSIFICATION^b DATA ENTRY FORM

Facility Name: Seedbiotics
Facility Location: Caldwell, Idaho
AIRS Number: 027-00088

AIR PROGRAM POLLUTANT	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	SM80	TITLE V	AREA CLASSIFICATION A-Attainment U-Unclassified N- Nonattainment
SO ₂	B							U
NO _x	B							U
CO	B							U
PM ₁₀	B							U
PT (Particulate)	B							U
VOC	B							U
THAP (Total HAPs)	B							U
			APPLICABLE SUBPART					

^a Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

^b AIRS/AFS Classification Codes:

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For HAPs only, class "A" is applied to each pollutant which is at or above the 10 T/yr threshold, or each pollutant that is below the 10 T/yr threshold, but contributes to a plant total in excess of 25 T/yr of all HAPs.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

Appendix B

Emissions Inventory

P-050018

Seedbiotics Estimated PM Emissions by Line: May 2005

Process	E _{PM} controlled		
	lb/hr	lb/yr	T/yr
Line 1	0.77	6728	3.36
Line 2	0.74	6472	3.24
Line 1 silo	1.15	420	0.21
Line 2 silo	0.023	8	0.00
Facility total	2.68	13,628	6.81

Seedbiotics Estimated TAP Emissions by Line: May 2005

Process	Emissions		
	lb/hr	lb/yr	T/yr
Line 1	0.89	7,832	3.92
Line 2	0.89	7,754	3.88
Line 1 silo	1.15	420	0.21
Line 2 silo	0.02	8	0.00
Facility Total	2.95	16,014	8.01

Appendix C

Modeling Review

P-050018

MEMORANDUM

DATE: July 12, 2005

TO: Charlie Mazzone, Permitting Engineer – Air Program Division

FROM: Kevin Schilling, Modeling Coordinator – Stationary Sources, Air Program Division *KS*

PROJECT NUMBER: P-050018

SUBJECT: Modeling review for the Seedbiotics Permit to Construct application for facility modifications at their Caldwell, Idaho facility.

1.0 SUMMARY

Becker Underwood submitted an application to modify their seed processing facility (Seedbiotics) located in, Caldwell, Idaho. Air quality analyses involving atmospheric dispersion modeling of emissions associated with the facility were submitted in support of a permit to construct (PTC) application to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02). ENVIRON International Corporation (ENVIRON), assisting Becker Underwood with the development of the permit, conducted the ambient air quality analyses.

A technical review of the submitted air quality analyses was conducted by DEQ. The submitted modeling analyses in combination with DEQ's staff analyses: 1) utilized appropriate methods and models; 2) was conducted using reasonably accurate or conservative model parameters and input data; 3) adhered to established DEQ guidelines for new source review dispersion modeling; 4) showed either a) that predicted pollutant concentrations from emissions associated with the proposed modification were below significant contribution levels (SCLs); or b) that predicted pollutant concentrations from facility-wide emissions, when appropriately combined with background concentrations, were below applicable air quality standards. Impacts of Toxic Air Pollutants (TAPs) were all below allowable increments of IDAPA 58.01.01.585 and 586. Table 1 presents key assumptions and results that should be considered in the development of the permit.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSES

Criteria/Assumption/Result	Explanation/Consideration
Impacts of sources were conservatively modeled using SCREEN3, and impacts were well below applicable standards.	Specific permit conditions, beyond those typically included in the permit for permit compliance purposes, are not necessary to ensure compliance with ambient air quality standards.

2.0 BACKGROUND INFORMATION

2.1 Proposed Modification

Seedbiotics is proposing the following in the submitted application:

- Route emissions from limestone storage silos through existing baghouses.

- Increase allowable production.
- Replace an existing mixer on Process Line 1.

2.2 Applicable Air Quality Impact Limits and Modeling Requirements

This section identifies applicable ambient air quality limits and analyses used to demonstrate compliance.

2.2.1 Area Classification

The Seedbiotics facility is located in Canyon County, designated as an attainment or unclassifiable area for sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), lead (Pb), ozone (O₃), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀). There are no Class I areas within 10 kilometers of the facility.

2.2.2 Significant and Full Impact Analyses

If estimated maximum pollutant impacts to ambient air from the emissions sources of the proposed modification and associated emissions increases and decreases exceed the significant contribution levels (SCLs) of IDAPA 58.01.01.006.91, then a full impact analysis is typically necessary to demonstrate compliance with IDAPA 58.01.01.203.02. A full impact analysis for attainment area pollutants involves adding ambient impacts from facility-wide emissions to DEQ-approved background concentration values that are appropriate for the criteria pollutant/averaging-time at the facility location and the area of significant impact. The resulting pollutant concentrations in ambient air are then compared to the NAAQS listed in Table 2. Table 2 also lists SCLs and specifies the modeled value that must be used for comparison to the NAAQS.

Table 2. APPLICABLE REGULATORY LIMITS

Pollutant	Averaging Period	Significant Contribution Levels ^a (µg/m ³) ^b	Regulatory Limit ^c (µg/m ³)	Modeled Value Used ^d
PM ₁₀ ^e	Annual	1.0	50 ^f	Maximum 1 st highest ^g
	24-hour	5.0	150 ^h	Maximum 6 th highest ⁱ
Carbon monoxide (CO)	8-hour	500	10,000 ^j	Maximum 2 nd highest ^k
	1-hour	2,000	40,000 ^l	Maximum 2 nd highest ^k
Sulfur Dioxide (SO ₂)	Annual	1.0	80 ^f	Maximum 1 st highest ^g
	24-hour	5	365 ^h	Maximum 2 nd highest ⁱ
	3-hour	25	1,300 ^j	Maximum 2 nd highest ^k
Nitrogen Dioxide (NO ₂)	Annual	1.0	100 ^f	Maximum 1 st highest ^g
Lead (Pb)	Quarterly	NA	1.5 ^h	Maximum 1 st highest ^g

^a IDAPA 58.01.01.006.91

^b Micrograms per cubic meter

^c IDAPA 58.01.01.577 for criteria pollutants

^d The maximum 1st highest modeled value is always used for significant impact analysis

^e Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

^f Never expected to be exceeded in any calendar year

^g Concentration at any modeled receptor

^h Never expected to be exceeded more than once in any calendar year

ⁱ Concentration at any modeled receptor when using five years of meteorological data

^j Not to be exceeded more than once per year

2.2.3 Toxic Air Pollutant Impact Analysis

Toxic Air Pollutant (TAP) analysis requirements for PTCs are specified in IDAPA 58.01.01.210. If the uncontrolled emissions increase associated with a new source or modification exceeds screening emission levels (ELs) of IDAPA 58.01.01.585 or IDAPA 58.01.01.586, then air dispersion modeling must be conducted to evaluate whether TAP impacts are below applicable TAP increments. If modeled impacts are less than applicable Acceptable Ambient Concentrations (AACs) for non-carcinogens of IDAPA 58.01.01.585 and Acceptable Ambient Concentrations for Carcinogens (AACCs) of IDAPA 58.01.01.586, then compliance with TAP requirements has been demonstrated.

2.3 Background Concentrations

Background concentrations were revised for all areas of Idaho by DEQ in March 2003¹. Background concentrations in areas where no monitoring data are available were based on monitoring data from areas with similar population density, meteorology, and emissions sources.

Background concentrations were previously provided to ENVIRON by DEQ for use in the Seedbiotics Tier II in 2003. These concentrations were based on default values for small town/suburban areas. Table 3 lists default background concentrations for rural/agricultural areas in Idaho.

Table 3. BACKGROUND CONCENTRATIONS

Pollutant	Averaging Period	Background Concentration ($\mu\text{g}/\text{m}^3$) ^a
PM ₁₀ ^b	Annual	27
	24-Hour	81
Carbon monoxide (CO)	8-Hour	10,200
	1-Hour	3,400
Sulfur Dioxide (SO ₂)	Annual	8
	24-Hour	26
	3-Hour	42
Nitrogen Dioxide (NO ₂)	Annual	32
Lead (Pb)	Quarterly	0.03

^a Micrograms per cubic meter

^b Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

3.0 MODELING IMPACT ASSESSMENT

3.1 Modeling Methodology

Table 4 provides a summary of the modeling parameters used for ENVIRON's analyses.

Table 4. MODELING PARAMETERS

Parameter	Description/Values	Documentation/Additional Description
Model	SCREEN3	Screening level regulatory model
Meteorological data	Full Meteorology	Generates worst-case conditions
Terrain	None	Area is effectively flat
Building downwash	Considered	Building dimensions entered into model
Receptor grid	Model Selected	Use maximum ground-level concentration

1 Hardy, Rick and Schilling, Kevin. *Background Concentrations for Use in New Source Review Dispersion Modeling*. Memorandum to Mary Anderson, DEQ, March 14, 2003.

3.1.1 Modeling protocol

A modeling protocol was not submitted to DEQ prior to the application.

3.1.2 Model Selection

The ambient air impact analyses were performed by ENVIRON using the model SCREEN3. SCREEN3 estimates maximum 1-hour concentrations for plume centerline locations (plume centerline in the horizontal direction). Concentrations for other averaging periods are calculated from the 1-hour results by multiplying the 1-hour result by an appropriate persistence factor. The following are the persistence factors used:

- 1-hour to 3-hour factor = 0.9
- 1-hour to 8-hour factor = 0.7
- 1-hour to 24-hour factor = 0.4
- 1-hour to annual factor = 0.08

DEQ concurs with ENVIRON's selection of SCREEN3 for dispersion modeling analyses and the selection of persistence factors. IDAPA 58.01.01.210.03.a.i specifies a 0.125 1-hour-to-annual persistence factor be used for screening modeling. In this instance, a refined modeling approach, as per IDAPA 58.01.01.210.03.a.ii, was used with SCREEN3, and DEQ determined a 0.08 1-hour-to-annual persistence factor was more appropriate for the Seedbiotics facility. This revised factor is consistent with current EPA modeling guidance.

SCREEN3 can only predict impacts for a single emissions source. To assess the impact of multiple sources, a separate modeling run was conducted for each source. The total impact was conservatively calculated as the sum of maximum impacts associated with each individual source.

3.1.3 Land Use Classification

The area within a 3-kilometer radius is predominantly rural. Therefore, rural dispersion coefficients were used rather than urban coefficients.

3.1.4 Meteorological Data

Model options in SCREEN3 were set to use full meteorology. This option utilizes worst-case meteorology for the source configuration.

3.1.5 Terrain Effects

The modeling analyses submitted by ENVIRON did not consider elevated terrain. DEQ reviewed USGS 7.5 minute maps to confirm the absence of significant terrain features in the areas where emissions from Seedbiotics could have a measurable impact.

3.1.6 Facility Layout

Facility layout is not critical for these SCREEN3 modeling analyses because maximum ground-level modeled concentrations were used to evaluate compliance, regardless of the downwind distance to ambient air. The configuration of sources is also not important because compliance was evaluated on the sum of maximum impacts of individual sources, regardless of the distance of sources from each other.

3.1.7 Building Downwash

Plume downwash effects caused by structures present at the facility were accounted for in the modeling analyses. Building dimensions were input to SCREEN3 to evaluate plume downwash. Concentrations within building recirculation cavities were also evaluated.

3.1.8 Ambient Air Boundary

The boundary to ambient air is not important to these modeling analyses because the maximum modeled concentration, regardless of location, was used to evaluate compliance.

3.1.9 Receptor Network

The model was set to calculate the maximum ground-level concentration, regardless of the downwind distance.

3.2 Emission Rates

Emissions rates used in the dispersion modeling analyses submitted by the applicant were reviewed against those in the permit application, the engineering technical memorandum, and the proposed permit. The following approach was used for DEQ verification modeling:

- All modeled emissions rates were equal to or slightly greater than the facility's emissions calculated in the PTC application or the permitted allowable rate, whichever was larger.
- Modeling results were compared to *significant contribution* thresholds. More extensive review of modeling parameters selected was conducted when model results approached applicable thresholds.

The proposed modification only resulted in an emissions increase in PM₁₀ and TAPs. ENVIRON modeled impacts of facility-wide PM₁₀ emissions as shown in Table 5. Impacts of other criteria pollutants were not assessed in this application since these impacts were assessed by analyses submitted in support of the existing Tier II operating permit.

Table 5. PM₁₀ EMISSIONS RATES USED FOR MODELING

Emission Point	Rate Used for Annual Modeling		Rate Used for 24-Hour Modeling	
	lb/year	lb/hr ^a	lb/day	lb/hr ^c
Line 1 Dust Collector	598	0.068	1.67	0.070
Line 1 Baghouse 1-1	1,943	0.22	5.3	0.22
Line 1 Baghouse 1-2	2,915	0.33	8.0	0.33
Line 2 Baghouse 2-1	1,943	0.22	5.3	0.22
Line 2 Baghouse 2-2	2,923	0.33	7.9	0.33
TOTAL	10,022	1.17	28.2	1.17

^a Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers

^b Pounds per hour based on lb/year divided by 8,760 hr/year

^c Pounds per hour based on lb/day divided by 24 hr/day

TAPs were conservatively assessed on a facility-wide basis. Dispersion modeling analyses were conducted for those TAPs with emissions exceeding the ELs, which included arsenic, calcium carbonate, and crystalline silica. Table 6 provides TAP emissions rates used in the modeling analyses.

Table 6. TAPS EMISSIONS RATES USED FOR MODELING

Emission Point	Rate Used for Modeling (lb/hr) ^a		
	Arsenic ^a	Calcium Carbonate ^b	Crystalline Silica ^b
Line 1 Dust Collector	0.0	0.070	0.00047
Line 1 Baghouse 1-1	1.8E-5	0.30	0.00111
Line 1 Baghouse 1-2	2.7E-5	0.45	0.00166
Line 2 Baghouse 2-1	1.7E-5	0.30	0.00108
Line 2 Baghouse 2-2	2.6E-5	0.45	0.00161

^a Pounds per hour based on lb/year divided by 8,760

^b Pounds per hour based on lb/day divided by 24

3.3 Emission Release Parameters

Table 7 provides emissions release parameters, including stack location, stack height, stack diameter, exhaust temperature, and exhaust velocity. All modeling was conducted using an ambient air temperature of 291 K.

Table 7. EMISSIONS RELEASE PARAMETERS

Release Point	Stack Height (m) ^a	Modeled Diameter (m)	Stack Gas Temp. (K) ^b	Stack Gas Flow Velocity (m/sec) ^c	Bldg. Height (m)	Bldg. Min and Max Horizontal Distance (m)	
Line 1 Dust Collector	6.1	0.4	291	18.3	7.9	31	43
Line 1 Baghouse 1-1	9.2	0.74	311	19.1	10.7	31	43
Line 1 Baghouse 1-2	9.2	0.74	311	19.1	10.7	31	43
Line 2 Baghouse 2-1	1.7	0.7	311	21.3	10.7	39	63
Line 2 Baghouse 2-2	1.7	0.7	311	21.3	10.7	39	63

^a Meters

^b Kelvin

^c Meters per second

3.4 Results

3.4.1 Full Impact Analyses

Table 8 summarizes the results of the full impact analyses.

Table 8. RESULTS OF THE PM₁₀ FULL IMPACT ANALYSES

Release Point	Max Hourly Dispersion Factor ($\mu\text{g}/\text{m}^3 / \text{g}/\text{sec}$) ^a	Emission Rates for 24-Hr Impacts (g/sec) ^b	Emission Rates for Annual Impacts (g/sec)	Maximum 24-Hour Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Maximum Annual Modeled Concentration ($\mu\text{g}/\text{m}^3$)	Impact Location – Downwind Distance (m)
Line 1 Dust Collector	5,466	0.0088	0.0086	19.2	3.76	24
Line 1 Baghouse 1-1	287	0.028	0.028	3.2	0.64	73
Line 1 Baghouse 1-2	287	0.042	0.042	4.8	0.96	73
Line 2 Baghouse 2-1	130	0.028	0.028	1.4	0.29	16
Line 2 Baghouse 2-2	130	0.042	0.042	2.2	0.4	16
Facility Total				30.8	6.1	
Background Concentrations				81	27	
Total Impact (Facility + Background)				112	33	
NAAQS ^c				150	50	
Concentrations below NAAQS				Yes	Yes	

^a (Micrograms per cubic meter impact) per (gram per second emissions)

^b grams per second

^c National Ambient Air Quality Standards

3.4.2 TAP Analyses

Table 9 summarizes the ambient TAP analyses. Maximum annual impacts of controlled carcinogenic TAPs were well below applicable AACCs and maximum 24-hour impacts of controlled TAPs were below AACs, thereby demonstrating preconstruction TAP compliance via IDAPA 58.01.01.210.08 (Controlled Ambient Concentration).

Table 9. RESULTS OF TAP IMPACT ANALYSES

Release Point	24-Hour Dispersion Factor ($\mu\text{g}/\text{m}^3 / \text{g}/\text{sec}$) ^a	Annual Dispersion Factor ($\mu\text{g}/\text{m}^3 / \text{g}/\text{sec}$) ^a	Maximum Modeled Concentration ^b ($\mu\text{g}/\text{m}^3$)		
			Arsenic	Calcium Carbonate	Crystalline Silica
Line 1 Dust Collector	2186			0.019	0.00013
Line 1 Baghouse 1-1	115	23	5.2E-5	0.004	0.00002
Line 1 Baghouse 1-2	115	23	7.8E-5	0.007	0.00002
Line 2 Baghouse 2-1	52	10	2.3E-5	0.002	0.00001
Line 2 Baghouse 2-2	52	10	3.4E-5	0.003	0.00001
Facility Total			1.9E-4	0.035	0.00019
AAC or AACC			2.3E-4	0.5	0.005
Impacts Below increment			Yes	Yes	Yes
Concentrations below AAC or AACC					

^a (micrograms per cubic meter) per (grams per second) dispersion factor, including a 0.4 1-hr to 24-hr persistence factor

^b (micrograms per cubic meter) per (grams per second) dispersion factor, including a 0.08 1-hr to annual persistence factor